METHODS OF OPERATING SURFACE REACTORS AND REACTORS EMPLOYING SUCH METHODS

ABSTRACT OF THE DISCLOSURE

Methods of operating surface reactors, and such reactors, particularly spinning disc reactors require that a first reactant is fed to the reactor surface and forms a thin film on the surface. A second reactant is fed to the surface in the form of a second thin film to interact with the first film so as to overcome the impedance to interaction between the two films imposed by the existence of molecular clusters in the films. Thus, each film is fed into the receiving film at a rate such as to break up the molecular clusters in the film and thereby permit the molecules to aggressively and completely interact with one another. In the spinning disc apparatus the films are fed at respective distances from the spin axis. The interaction takes place in a thin chamber (less than 1 mm) between a retaining surface coextensive with the reactor surface whose distance from one another can be varied continuously, with the components being sheared between the surfaces to break up the molecular clusters to facilitate molecular, forced interdiffusion . Preferably each film is fed into the reaction chamber through a respective annular nozzle producing an improved uniformity of initial and continuous contacting of the reactants followed by an increase in forced interdiffusion of reactant molecules.